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July 16, 2002

Mr. Fred Micke, On-Scene Coordinator
Ms. Verneta Simon, On-Scene Coordinator
U. S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, SE-5J
Chicago, Illinois 60604

RE: Corrected Version of Field Sampling Plan for QAPP Revision 3, 341 East Ohio Street
Site, Chicago, Illinois - STS Project No. 1-25585-XG, Correspondence No. 098

Dear Mr. Micke and Ms. Simon:

On July 12, 2002, STS Consultants, Ltd. transmitted Revision 3 of the Quality Assurance Project Plan (QAPP) for the above-referenced project to USEPA. It was brought to my attention that the Field Sampling Plan included in Appendix C of the QAPP was an incorrect version. Four copies of the correct version of the Field Sampling Plan are enclosed. Please remove the existing Field Sampling Plan from Appendix C of the QAPP (Revision 3) and replace it with the enclosed version. For your reference, the correct version of the Field Sampling Plan has the following path and filename identifier in the footer of the document:

K:\25585\XG\Z185G002 Appendix 9-rev1.doc.

I apologize for the error and any inconvenience this may have caused. If you have questions, please feel free to contact me at 847-279-2500.

Sincerely,

STS CONSULTANTS, LTD.


John S. Esser, P.E., P.G.
Senior Project Engineer

Enclosures: QAPP Appendix C - Field Sampling Plan - 4 copies

cc: Timothy Ramsey, Piper Rudnick (1 copy)

EPA Region 5 Records Ctr.



231466

341 EAST OHIO STREET SITE

FIELD SAMPLING PLAN

APPENDIX C

Title: Field Sampling Plan

Revision Number: 1

Date: September 13, 2001

Replaces: New

FIELD SAMPLING PLAN

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1.0 INTRODUCTION

This Field Sampling Plan (FSP) describes the quality-related sampling activities that will be implemented during the excavation activities at 341 East Ohio Street site (Site), located in Chicago, Illinois.

Samples will be collected under the Quality Assurance Project Plan (QAPP) for the following limited aspects of the work:

1. Air monitoring.
2. Sampling excavated backfill soil material to ensure that the material returned into excavations is clean, that is, that the radiological composition of the backfill material is statistically demonstrated to be below the cleanup criteria.
3. Confirmation that material proposed for loading has total radium concentrations greater than 7.1 pCi/g.
4. Local background has been established for total radium (Ra-226 and Ra- 228) at 2.1 pCi/g.
5. Verification sampling to ensure that contaminants which were present above the cleanup criteria have been removed.
6. Material to be shipped for disposal as radiologically-impacted soil does not exhibit hazardous waste characteristics per RCRA.
7. Groundwater removed from the Site for excavation dewatering meets pre-treatment standards for the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC).

The USEPA identified the constituents of concern as the entire thorium 232 and uranium 238 decay chains, including radium-226 and radium-228. This sampling program includes monitoring only for total radium (Ra-226 and Ra-228) in accordance with the Unilateral Administrative Order (UAO).

The characteristic hazardous waste classification analysis per 40 CFR 261.4 will include:

Ignitability	Flash Point
Corrosivity	pH
Reactivity	unstable, reacts violently with water, is sufficiently cyanide or sulfide bearing the produce toxic gas, or is capable of detonation.
Toxicity	TCLP analysis for regulated contaminants

The groundwater analysis will include the parameters specified in Appendix A of the MWRDGC Environmental Remediation Wastewater Ordinance (May 9, 1996).

<u>Waste or Chemical</u>	<u>Concentration (mg/L)</u>
Cadmium	0.11
Chromium (total)	2.77
Copper	2.07
Cyanide (total)	1.20
Fats, Oils and Greases (FOG) (total)	250.0
Iron	250.0
Lead	0.5
Mercury	0.0005
Nickel	3.98
Zinc	2.61
Dichloromethane	0.294
Chloroform	0.309
1,1,1-Trichloroethane	0.193
Trichloroethylene	0.242
Benzene	0.278
Tetrachloroethene	0.225
Toluene	0.247
Ethylbenzene	0.329
Volatile Organic Compounds (total)*	0.567
Total Toxic Organics**	2.13

pH Range - Not lower than 5.0 or greater than 10.0

Temperatures of liquids or vapors at point of entrance to the sewerage system shall not exceed 150°F.

* Total Volatile Organic Compounds shall be the arithmetic sum of the concentrations of:

dichloromethane
chloroform

1,1,1-trichloroethane
trichloroethylene
benzene
tetrachloroethene
toluene
ethylbenzene
acrolein
acrylonitrile
1,3-butadiene
carbon tetrachloride
chlorobenzene
dichloroethane
dichlorobenzene
1-ethyl 2-methylbenzene
naphthalene
styrene
1,3,5-trimethylbenzene
vinyl chloride
xylenes
1,4-dioxane
ethylene dibromide
methyl ethyl ketone

**** Total Toxic Organics** shall be the arithmetic sum of the concentrations of those pollutants found under Title 40 Part 413.02(i) of the Code of Federal Regulations.

This FSP describes the basis for the backfill, air monitoring, verification, and waste characterization sampling programs. It describes sample locations, field sampling and surveying, field instruments, decontamination, and sample management that will comprise the quality-related excavation sampling.

Field sampling activities described in this plan include the following:

- Soil sampling for laboratory analysis of radioactive constituents of concern to document contaminant levels present and confirm excavated spoil soil are below cleanup criteria.
- Air sampling (filter paper) for laboratory analysis of radiological constituents of concern;
- Verification sampling to ensure removal of contamination above the cleanup criteria.

- Onsite management of samples;
- Decontamination; and
- Analytical programs.

The FSP specifies techniques, equipment, and procedures for each activity, number and type of sample, and contingencies that may be implemented during the excavation activities. Standard Operating Procedures (SOPs) that will be followed in the sampling and analyses are included in the QAPP.

2.0 SAMPLE NETWORK AND RATIONALE

This section describes the sampling collection programs and the bases upon which the programs have been developed.

2.1 **SAMPLING OBJECTIVES**

The objectives of the air sampling program described in this plan are to collect sufficient air samples during soil excavation to assure that excessive airborne contaminated dust is not being released. Air monitoring activities will be conducted within excavated areas to monitor personnel exposures, and at the perimeter of the site to monitor releases to the uncontrolled environment.

The objectives of the soil sampling program described in this plan are to assure that soil used as backfill is clean.

The objectives of the verification sampling program are to ensure that all contamination in excess of the cleanup criteria has been removed. Gamma screening and specific soil testing will be conducted, and the results reported to the U.S. EPA. A complete description of the verification sampling program is included in the specifications attached to the Construction Quality Assurance Plan (CQAP).

The following types of samples will be collected at the Site:

Air Samples

The following air samples will be taken during excavation activities:

- High-volume particulate air samples (for radioactivity) from site perimeter monitoring stations; and
- Samples from personal samplers (for radioactivity).

Backfill Soil Samples

Samples of excavated soil under consideration for use as backfill will be collected in accordance with soil sampling procedure (SOP-214). Statistical analysis will be conducted to document the soil is suitable as backfill.

Sampling will be from lifts, 18 inches or less thick, or from stockpiles, samples in accordance with SOP-214.

Verification Samples

The samples will be collected in accordance with the Soil Sampling Procedure (SOP-214) and the Verification Sampling Plan (Appendix 5 of the Work Plan). One set of 6 subsamples will be analyzed for each 100 m², or less, of excavated area. The subsample set will be prepared from five samples, about 15 centimeters deep (six inches), obtained at the center (one sample) and half way between the center and each corner (four samples).

Waste Characterization Samples

The samples will be collected at locations where previous investigations (May 2000 Koh report) have shown elevated gamma readings. The sampling objective is to evaluate whether these soils exhibit characteristics of hazardous waste that would constrain disposal at the proposed low-level radioactive materials disposal facility.

Samples will consist of ten individual samples from the ten borings distributed across the seven identified locations with elevated gamma readings. Each sample will consist of the fill material above the native sand soil. Samples will be collected in 3-inch diameter split spoons through either hollow stem augers, or if the fill contains sufficient obstructions to constrain hollow stem augers, through borings drilled with solid flight augers.

Dewatering Groundwater Samples

A representative sample of site groundwater will be obtained to document the water quality of water which would be discharged to the Chicago city sewer as part of site dewatering. The objective of this sampling is to evaluate whether the water meets the City's Environmental Remediation Discharge Standards.

The groundwater sample will be from a well located where the excavation will extend to beneath the groundwater table, at the east end of the Site. The well will be a 2-inch diameter PVC well casing and screen with a natural sand sand-pack. The well will be developed by pumping or bailing until pH, temperature and specific conductance are stable (less than 15% variation between successive measurements). The samples will be preserved in accordance with SW-846 methods, stored on ice and shipped under chain-of-custody. The sample will be unfiltered prior to preservation.

2.2 SAMPLE TYPE, LOCATION AND QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

2.2.1 Air Monitoring

The air monitoring program is described in detail in the Air Monitoring Plan, Appendix 8 to the Work Plan.

High-volume air samples will be obtained from perimeter monitoring stations located at four points (north, south, east, and west) around the site.

Air samples will be collected during excavation activities to determine the presence of airborne radioactivity particulates. The air sampling procedure is included as SOP-212 in the QAPP.

Four air monitoring stations will be established at the Site before the excavation begins. Air monitoring locations will be located along the margins of each quarter of the Site at points

on the north, south, east, and west sides of the site. Air samplers will be used to collect ambient air particulates on filters for subsequent counting.

2.2.2 Verification Sampling

The verification sampling program is described in detail in the Verification Survey Procedure (SOP 223).

Verification sampling is intended to be confirmatory to the verification gamma scan. Laboratory analyses of sets of 6 subsamples, each consisting of a set of 6 subsamples representing an excavated area of 100 ^m², shall be used to confirm that the cleanup criteria were achieved.

2.2.3 Waste Characterization Sampling

The waste characterization samples will consist of soil and debris encountered above the native sand soil. Samples will be recovered in 3-inch diameter split spoon samples. Samples will be placed in one 1-liter bottle and one 4-ounce jar with teflon sealed lids. Containers will be packed to minimize headspace.

Preservation will be limited to storing on ice. Holding times will be in accordance with SW-846 with extractions before seven days. QA/QC procedures will be in accordance with the laboratory (STL) QAPP, included in the QAPP.

3.0 SAMPLE MANAGEMENT PROCEDURES

3.1 FIELD ACTIVITY DOCUMENTATION

Field logbooks will be used to document daily field activities in accordance to Section 5 of the QAPP. Field logbook documentation procedures are in SOP-215 in this QAPP.

3.2 SAMPLE IDENTIFICATION

All samples collected at the Site will be identified according to the Soil Sampling Procedure (SOP-214).

3.3 SAMPLE CONTAINERS

Sample containers have been selected based on the sample matrix and requirements of the analytical methods. Suitable containers used during the excavation and restoration activities include:

Air Monitoring Station Sampling

- Envelopes of suitable size for glass fiber filters.

Soil Sampling

- Plastic bottles or plastic bags of suitable size for soil samples.

3.4 SAMPLE PRESERVATION

Soil samples to be tested for radioactivity do not require preservation.

Waste characterization samples will be stored on ice and shipped in a cooler, under chain-of-custody, by overnight courier.

3.5 SAMPLE HOLDING TIME

All initial radiological analysis will be performed within six months from the date the sample was collected.

All waste characterization analysis will be extracted within seven days of sampling.

3.6 SAMPLE LABELS

Each container will be labeled with the following minimum information:

- Date and time of sample;
- Unique sample number, including geographic (grid) location;
- Sample volume (air samples);
- Project identification; and
- Name of sampler.

Other information such as weather conditions, sample analysis, and sample preservation may be included on the sample label, as appropriate.

4.0 DECONTAMINATION

All discarded materials, waste materials, and other field equipment and supplies will be handled in such a way to prevent the potential spread of contamination during excavation activities. Discarded items that have contacted contaminated materials will be containerized and transported to the approved disposal facility. Non-contaminated discarded items will be collected, bagged, and placed in dumpsters for disposal at an approved landfill.

4.1 PERSONNEL DECONTAMINATION

The following procedure will be implemented for personnel decontamination when work activities are conducted in contaminated areas. This procedure is based on USEPA's Standard Operating Safety Guides, Publication 9285.1-03, PB92-963414 (June 1992).

1. Equipment Drop: Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, clipboards, etc.) on plastic drop cloths.
2. Outer Boot and Glove Removal Remove outer boot covers and gloves and deposit in appropriate container.
3. If Respirator Worn - Canister or Mask Change When a worker leaves the Exclusion Zone to change canister or mask, this is the last step in the decontamination procedure. The worker's canister is exchanged, new or clean outer gloves and boot donned, and the worker returns to duty.
4. Boots, Gloves, and Outer Garment Removal Boots and outer garment (coveralls) and inner gloves are removed and deposited in appropriate containers.
5. Personal Radiation Survey Perform radiation survey of personnel.
6. Face Piece Removal: If applicable, face piece is removed. Avoid touching face with fingers. The face piece is deposited on plastic sheet.
7. Field Wash: Wash face and hands thoroughly. Shower as soon as possible.

4.2 EQUIPMENT DECONTAMINATION

All sampling equipment will be wiped clean of soil and dust between each use when work activities are conducted in contaminated areas:

4.3 CONTAINER AND SHIPPING CONTAINER DECONTAMINATION

The following general procedure for decontamination of sample containers and shipment packages will be followed:

1. Seal container or shipping package;
2. Wipe container or shipping package with paper and tap water;
3. Allow to air dry; and
4. Perform radiation release survey.